

What is claimed is:

1. A pump, comprising:
a compression surface;
a hollow compression tube secured to the compression surface;
5 compression means for incrementally compressing the compression tube against the compression surface to create a moving occlusion of the compression tube that uniformly pushes fluid through the compression tube, wherein the compression means has at least one rest position in which the compression means does not compress the compression tube.
- 10 2. The pump of claim 1, wherein the compression means is a single roller that rolls along the compression tube.
3. The pump of claim 2, wherein:
the compression surface is annularly shaped; and
15 the single roller rotates about a fixed point.
4. The pump of claim 1, wherein:
the compression surface is elliptically shaped; and
the single roller is mounted to a spring loaded arm that rotates about a fixed point.
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5. The pump of claim 4, wherein as the spring loaded arm rotates through a complete revolution about the fixed point, the single roller disengages from the compression tube at least twice.
- 25 6. The pump of claim 1, wherein:
the compression means is a plurality of rollers that roll along the compression tube;
and
no more than one of the plurality of rollers compresses the compression tube at any
30 given time.

7. The pump of claim 1, wherein:
a channel is formed in the compression surface;
the hollow compression tube includes a flange extending along a length thereof; and
the flange is engaged with the channel for securing the compression tube to the
5 compression surface.

8. The pump of claim 7, wherein the flange is tube shaped and integrally formed
with the compression tube.

10 9. The pump of claim 1, further comprising:
a pump housing that defines a cavity, wherein the compression means is disposed in
the cavity; and
a cassette assembly removably disposed in the cavity, wherein the cassette assembly
includes the compression surface and the hollow compression tube.

15 10. The pump of claim 1, wherein the compression means includes a second rest
position in which the compression means forms a temporary pinch-valve by temporarily
stalling the moving occlusion of the compression tube.

20 11. A pump, comprising:
a pump assembly that includes:
a pump housing that defines a cavity,
a roller disposed in the cavity, and
a motor for moving the roller relative to the housing;
25 a cassette assembly removably disposed in the cavity and including:
a cassette housing having a compression surface, and
a hollow compression tube secured to the compression surface;
wherein as the motor moves the roller, the roller presses the compression tube against the
compression surface to create a moving occlusion of the compression tube for pushing fluid
30 through the compression tube.

12. The pump of claim 11, further comprising:
an arm disposed in the cavity and including a proximal end and a distal end, wherein
the roller is attached to the distal end of the arm and the motor is attached to the proximal end
5 of the arm.

13. The pump of claim 12, wherein the arm is spring loaded for applying pressure
on the compression tube by the roller.

10 14. The pump of claim 12, wherein the arm has a rest rotational position where
the roller does not contact the compression tube.

15 15. The pump of claim 11, wherein:
a channel is formed in the compression surface;
the hollow compression tube includes a flange extending along a length thereof; and
the flange is removably engaged with the channel for securing the compression tube
to the compression surface.

20 16. The pump of claim 15, wherein the flange is tube shaped and integrally
formed with the compression tube.

25 17. The pump of claim 11, wherein the pump housing includes:
a lower pump housing portion;
an upper pump housing portion removably attached to the lower pump housing
portion.

30 18. The pump of claim 17, wherein the upper pump housing portion is hingedly
attached to the lower pump housing portion.

19. The pump of claim 17, further comprising:
a sensor for sensing that the upper pump housing portion is positioned in a closed position relative to the lower pump housing portion.

5 20. The pump of claim 11, further comprising:
a sensor for sensing that the cassette assembly is disposed in the cavity.

21. The pump of claim 15, wherein the cassette housing includes:
a lower cassette housing portion;
10 an upper cassette housing portion removably attached to the lower cassette housing portion.

22. The pump of claim 21, wherein:
the lower cassette housing portion includes an annular sidewall and a shoulder
15 extending from the annular sidewall;
the upper cassette housing portion includes an annular sidewall; and
the annular sidewalls of the lower and upper cassette housing portions mate together to form the compression surface, where upper cassette housing portion sidewall is positioned a fixed distance away from the shoulder to define the channel.

20 23. The pump of claim 21, wherein:
one of the lower and upper cassette housing portions includes tabs for engaging the other of the lower and upper cassette housing portions.

25 24. The pump of claim 14, wherein the arm has a second rest rotational position where the roller forms a temporary pinch-valve by temporarily stalling the moving occlusion of the compression tube.